

DEVICE FOR SUPPORTING BARRELS

5           The present invention relates to a device for supporting barrels.

          By barrel, there is meant in the following description any container or cask having a substantially cylindrical or truncated conical wall or in the form of a  
10 drum, closed at each end by substantially circular walls called bottoms.

          These barrels are preferably of wood and used for wine making.

          According to a first simplified storage method,  
15 the barrels are stacked so as to form a pyramidal structure, each barrel resting on two lower barrels and the bottoms of said barrels being disposed in parallel vertical planes.

          As a modification, there can be provided between  
20 each level of barrels and the floor, two parallel supports, for example posts, disposed parallel to and adjacent to bottoms of the barrels.

          This first stockage method is not satisfactory because the handling of the barrels at the lower levels,  
25 particularly for emptying or withdrawal, is impossible.

To overcome these drawbacks, there can be provided a frame to support the barrels as described in French Patent Application No. 2.814.526. This latter comprises a plurality of modular structures adapted each to receive a single container, each comprising a first support on which is adapted to rest a first end of a barrel and a second support on which is adapted to rest the other end of the barrel, the first supports of the modular structures being interconnected, as are the second supports. Thus, this frame has a symmetrical structure with two assemblies of supports disposed in two vertical parallel planes.

Even if this method of storage permits handling the barrels particularly for emptying, it is not entirely satisfactory because it is necessary to provide for each row of barrels two carrying structures, one in front of the barrels and the other behind.

Moreover, because of the symmetry of the structures, this type of frame can only be rectilinear and cannot bear against a curved wall.

Another type of support, disclosed in British 2 123 381, comprises posts, at least two, disposed in a substantially vertical plane behind the barrels, interconnected by cross pieces and on which are connected substantially horizontal arms grouped two by two forming a

support for the barrels in cantilever fashion. To ensure mechanical resistance, the posts have a square or rectangular cross section that is relatively great to limit the risks of flexure and the arms are reinforced by cross  
5 pieces.

Even if this type of device with cantilevered supports offers a facility of handling the barrels, it does not give complete satisfaction because the carrying structure is necessarily massive and is not very esthetic.

10 Moreover, this type of device can only be rectilinear and cannot create a curved wall.

In all these cases, it will be noted that the existing devices can support but a single row of barrels.

Also, the present invention seeks to overcome the  
15 drawbacks of the devices of the prior art by providing a frame to support the barrels which will be simple and resistant in design, permitting easy handling of the barrels.

To this end, the invention has for its object a  
20 device for supporting at least one barrel comprising at least two posts, characterized in that it comprises at least two support means for at least one barrel, connected in overhanging fashion to the posts and disposed on opposite sides of the posts so as to balance the loads.

Preferably, at least one of the posts is prestressed.

Other characteristics and advantages will become apparent from the description which follows, of the invention, which description is given only by way of example, with respect to the accompanying drawings, in which:

- Figure 1A is a perspective view of an empty device to support barrels according to the invention with elements in the course of assembly,

- Figure 1B is a perspective view of a device with barrels,

- Figure 2 is a cross sectional view of a post,

- Figure 3 is a cross sectional view showing a foot in detail,

- Figure 4 is a cross sectional view showing in detail the upper portion of a post,

- Figure 5 is a cross sectional view showing in detail the lower portion of a post,

- Figure 6 is a cross sectional view showing in detail the medial portion of a post,

- Figure 7 is a perspective view showing a modification of the support means for a barrel, and

- Figure 8 is a cross sectional view showing in detail a portion of the support means of Figure 7.

In Figures 1A and 1B, there is shown a frame 10 for supporting barrels 12.

5           By barrel, it is meant any container or cask comprising a first substantially cylindrical or truncated conical wall, or in the form of a drum, with at each end circular walls forming a bottom. Preferably, the barrels are made of wood and are used for wine making.

10           However, there could be envisaged other materials (for example metal), other shapes and other applications.

          According to the invention, the frame comprises at least two posts 14 and at least two support means 16 each for at least one barrel 12, said means 16 being  
15 connected to the posts 14 in overhanging fashion, and disposed on opposite sides of the plane defined by said posts so as to balance the loads and limit the risk of flexure of said posts, as shown in Figure 1B. Thanks to this characteristic, there can be provided less massive  
20 devices.

          On the other hand, two rows of barrels can be supported by a single carrying structure.

          This solution permits mechanical resistance sufficient to reduce the cross section of the posts and/or

the moment of inertia, which contributes to improving the appearance of the frame by using particularly posts with substantially circular or elliptical cross sections.

Preferably, at least one of the posts is  
5 prestressed to limit the flexure of said post 14 by reason of the support means 16 in overhanging fashion.

This prestress can be useful when the support means 16 in overhanging fashion are disposed on but a single side of the posts to limit the flexure of said posts  
10 or when the withdrawal of the barrels is not carried out in a symmetrical manner on opposite sides of the posts. This solution also permits mechanical resistance sufficient to reduce the cross section of the posts and/or the moment of inertia which contributes to improving the esthetics of the  
15 frame by using particularly posts with substantially circular or elliptical cross section.

Preferably, all the posts are prestressed.

According to a preferred embodiment, the prestressed posts are posts 14 each comprise at least one  
20 hollow element in which is disposed a tension member 18 permitting exerting a compressive force between the ends of the post 14.

Preferably, the lower end of the post 14 comprises connection means to the floor limiting the risk

of pivoting. According to a preferred embodiment and shown in Figures 1A, 1B and 2, a base 20 is provided at the lower end of the posts, said base 20 comprising a substantially cylindrical portion 22, ensuring the connection with the post 14 and at least one arm 24 extending from said portion 22 substantially horizontally below the overhanging support means 16.

Preferably, feet 26 adjustable in height are provided below the base 20 so as to compensate the effects of planarity of the floor and/or to adjust the inclination of the support means 16. According to one embodiment, this foot comprises a bearing surface prolonged by a vertical rod with at least one screw threaded portion adapted to be screwed into a tapping provided in the base or on which is adapted to be screwed a bolt whose upper surface serves as a bearing surface for the base.

As a modification, the base can comprise two substantially cylindrical portions 22, each adapted to be connected to the end of a post, a cross piece connecting said cylindrical portions as well as an arm extending from the cross piece between the two cylindrical portions 22, as shown in Figure 1A. This configuration permits reducing the number of feet, these latter being disposed between the posts.

The overhanging support means 16 can be of different types, particularly in the form of arms extending substantially horizontal. According to a preferred embodiment and shown in Figures 1A and 7, the support means 5 16 are present in the form of a surface 28 adapted to the shape of the barrels, particularly slightly incurved. To improve the mechanical resistance and to avoid flexure of the surface 28 relative to the posts, the surface 28 is preferably more incurved. This characteristic also permits 10 reducing the overall size. As the case may be, the barrel can be disposed directly on the surface 28 or on the lugs 32 connected to the surface 28, as shown particularly in Figure 1A.

According to another characteristic, the support 15 means 16 comprise a cross piece 34 ensuring the connection between at least two posts 14. According to one embodiment, the curved end of the surface 28 is connected to the lateral surface of the corresponding cross piece 34. The incurved portion of the surface 28 permits limiting the 20 flexure of the surface 28 relative to the cross piece 34 and to preserve a substantially horizontal surface 28. Thus, the profile of the surface 28 according to a cross section substantially parallel to the cross piece 34



permits limiting the risks of bending of said surface relative to the cross piece.

According to a modification shown in Figures 7 and 8, the support means 16 comprise bearing points 50  
5 whose position is adjustable as a function of the size of the barrels.

In this case, the bearing points 50 comprise a roller 52 connected on an axle 54 extending substantially perpendicular to the cross piece 34, the position of roller  
10 50 being adjustable along the axle 54.

Preferably, the roller 50 is pivotably mounted about the axle 54.

Preferably, the axle 54 comprises a screw threaded periphery on which can be screwed a socket 56 to  
15 which is connected the roller 52. A counter nut 58 can be provided to immobilize in translation the roller/socket assembly relative to the axle 54. According to one embodiment, this axle 54 is disposed in a recess 60 provided in the surface 28. This recess 60 comprises on  
20 the two sides of the bearings 62, obtained by cutting out and bending suitably the surface 28, adapted to receive the ends of the axle 54. Screws 64 are connected to the ends of the axle 54, disposed below the surface 28 so as to prevent the withdrawal of the axle 54 from the bearings 62.

Preferably, the surface 28 also comprises openings 66 permitting connecting lugs 32.

According to another modification, the surface 28 can comprise lugs and rollers to support the barrel.

5           As a supplement, an abutment can be connected to the cross piece 34 to limit the translation of the barrel rearwardly.

When the frame is symmetrical, two support means 16 can be connected to a same cross piece 34, on opposite  
10 sides of said cross piece 34, as shown in Figure 2.

According to one embodiment, at least hollow element 36, particularly a tube, is connected at one of the ends of the cross piece 34, said tube 36 being adapted to constitute a hollow element of a post 14. This arrangement  
15 can obtain an articulation between the support means 16 and the posts such that the frame 10 need not be rectilinear and can nest against the curved walls. Preferably, a tube 36 is provided at each end of the cross piece 34.

According to another characteristic of the  
20 invention, the prestressed posts 14 each comprise at least one tubular element within which is disposed a tension member 18, said tubular elements comprising at least one tube 36 of the support means 16, termed in what follows a junction tube 36, and generally but not necessarily as can

be seen for the post 14 to the right of Figure 1A, at least one tube 38 called in what follows a cross bar disposed between two junction tubes 36 or between a junction tube 36 and the lower end of the post.

5           The length of the cross bar 38 permits adjusting the height of the support means 16. Moreover, these tubular elements permit obtaining a frame 10 to support barrels, with an adjustable structure, permitting different configurations.

10           According to one harmonious configuration with three levels shown in Figure 1A, the posts comprise from top to bottom a junction tube 36, cross pieces 34 connecting the posts 14.1 and 14.2, the posts 14.3 and 14.4, the posts 14.5 and 14.6, the posts 14.7 and 14.8, and  
15 so on; a cross bar 38; a junction tube 36, the cross pieces 34 connecting the posts 14.2 and 14.3, the posts 14.4 and 14.5, the posts 14.6 and 14.7, and so on; a cross bar 38; a junction tube 36, the cross pieces 34 connecting the posts 14.3 and 14.4, the posts 14.5 and 14.6, the posts 14.7 and  
20 14.8, and so on.

          In Figure 1A, the frame is shown with aligned posts 14, disposed in a same plane. However, the posts can be disposed along a curve thanks to the articulated connection between the posts.

According to a preferred embodiment and shown in the various figures, the tension member 18 is present in the form of a tube with screw threaded ends. According to modifications, the tension member 18 could be a single  
5 member or be constituted by several interconnected elements.

In Figures 4 and 5, there is shown a detailed cross section of the upper and lower portions of a post 14.

According to a preferred embodiment, the base 20  
10 comprises a tapped bore 40 in which is adapted to be screwed one of the screw threaded ends of the tension member 18 as well as a surface against which can bear the lower tubular element of the post 14. Preferably, this bearing surface is present in the form of a shoulder 42,  
15 the lower end of the tubular element of the post fitting like a sleeve on a portion of the base and bearing against said shoulder.

In the upper portion, a nut 44 screws onto the upper screw threaded portion of the tension member 18 and  
20 bears directly or indirectly by means of a ring for example, against the upper end of the upper tubular element of the post 14. Thus, by screwing the nut 44, there is exerted a compressive force on the tubular elements of the post, permitting obtaining a prestress of said post 14.

According to another characteristic of the invention, so as to reduce the phenomena of flexure, the prestressed posts 14 can comprise at least one ring 46 disposed between the tension member 18 and the tubular element or elements, the internal diameter of the ring 46 being substantially adjusted to the external diameter of the tension member 18 and the external diameter of the ring being adjusted to the internal diameter of the tubular element or elements. Preferably, to avoid sliding of the ring 46 between the tension member 18 and the tubular element, the ring 46 comprises at least one projecting element, particularly a small collar 48, adapted to be disposed between the tubular elements.

Preferably, the edges of the ring 46, particularly those in contact with the tension member 18, are chamfered or rounded so as to reduce the phenomena of breakage.

Moreover, the ends of the tubular elements are bored so as to adjust the diameter of the bore of said tubular elements to the external diameter of the ring 46 or of the shoulder 42 of the base 20.

According to a simplified modification, the device comprises posts 14 that are prestressed or not, on

which are connected support means such as shown in Figure 7 by screwing the cross piece 34 directly on said posts.

Of course, the invention is clearly not limited to the embodiment shown and described above, but on the  
5 contrary covers all modifications, particularly as to the dimensions and materials of the different elements and the arrangement of the frame, which can be adjustable.